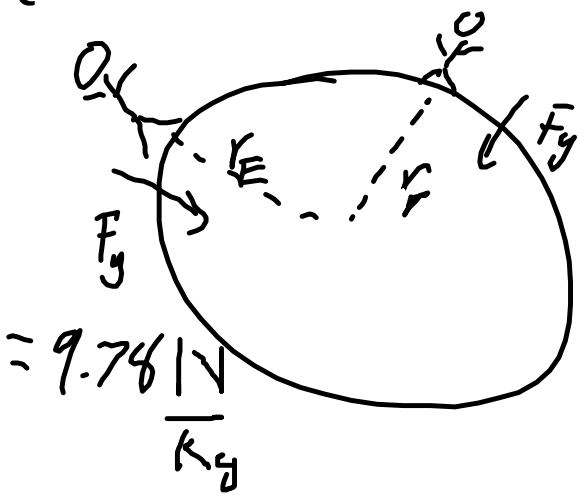
Today go over Q1-7 handout
and p122 Q21-33 odds
finish what you should have done
then p123 Q51,52, 56, 61, 62

Handout
Q1



Earth is not a perfect sphere

$$F_g = \frac{GM_E}{r^2}$$

r is smaller at the poles so Fg is greater

if you do the calculation based on r, it only accounts for about 0.02 N/kg of difference.

What causes the other 0.03? 9.83-9.78=0.05

What is the acceleration due to the centripetal motion at the equator?

$a = 4\pi^2 r/T^2 = 4x(3.14159)^2 x6.38E6m/(24x3600s)^2 = 0.03374\ m/s^2$

aha, so the apparent weight at the equator is less than at the pole because you are partially accelerating towards the centre of the Earth.

apparent weight = R = Fg-Fc
as Fc increase, weight decreases

Q2 T=102minutes around Mars $r=3.43x10^6m$ (close to surface, so h is negligible)
$a= 4\pi^2r/T^2 = 4x(3.14159)^2x3.43E6/(102x60)^2=3.61535 = 3.62$ N/kg (field strength)
or
$g = GM/r^2$ but you would have to look up mass of mars.

Test is moved to Thursday, Nov 30th
next class go over questions and introduce energy